[File 155] MEDLINE(R) 1950-2007/Oct 18

[File 5] Biosis Previews(R) 1926-2007/Oct W2

[File 73] EMBASE 1974-2007/Oct 23

[File 144] Pascal 1973-2007/Oct W2

[File 35] Dissertation Abs Online 1861-2007/Jul

[File 65] Inside Conferences 1993-2007/Oct 22

[File 6] NTIS 1964-2007/Oct W4

[File 8] Ei Compendex(R) 1884-2007/Oct W1

[File 24] CSA Life Sciences Abstracts 1966-2007/Jun

[File 136] BioEngineering Abstracts 1966-2007/Jan

Set	Items	Description
S1	49699	S (SPINE OR SPINAL)(2N)(POSITION? OR STABILI?) OR SCOLIOSIS OR SCOLIOTIC OR SPINOUS()PROCESS??
S2	7176701	S IMPLANT? OR SURGERY OR SURGICAL??
S3	1836451	S PLATE OR PLATES OR ROD OR RODS OR SPRINGPLATE? ? OR SPRINGROD? ? OR SPRING OR SPRINGS
S4	133713	S (TWIST???? OR ROTAT???? OR DEROTAT? OR AXIAL?? OR TORSION? OR TURN????)(3N)(FORCE OR FORCES OR MOVEMENT? ?) OR TORQUE?
S5	97	S S1 AND S2 AND S3(S)S4
S6	57	RD (unique items)
S7	4	S S6/2004:2005
S8	7	S S6/2006:2007
S9	46	S S6 NOT S7:S8
S10	46	S S3(10N)S4 AND S1
S11	5	S S10 NOT S5
S12	5	RD (unique items)
S13	51	S S12 OR S9
S14	51	SORT S13/ALL/PY,A

14/7/2 (Item 2 from file: 73)
EMBASE

00088538 EMBASE No: 1974078619
Telemetry recordings of forces in the Harrington distraction rod: a method for increasing safety in the operative treatment of scoliosis patients
Elfstrom G.; Nachemson A.
Res. Lab. Med. Electr., Chalmers Univ. Technol., Goteborg Sweden
CLIN.ORTHOP. 1973 , 93/- (158-172)
CODEN: CORPA
Document Type: Journal
Language: ENGLISH
Using a new method of intravital wireless telemetry of the axial forces in the Harrington distraction rod, mechanical forces maintaining the correction can be monitored during and within 2 wk after the operation. Measurements are presented to illustrate the principle of safety first in scoliosis surgery with Harrington rods , a principle proven effective in reducing complications during and after operation and subsequent loss of correction.

14/7/3 (Item 3 from file: 73)
EMBASE

00049216 EMBASE No: 1974039260
Results with intravital wireless telemetry of forces in the Harrington distraction rod
Nachemson A.; Elfstrom G.
Dept. Orthop. Surg., Univ. Goteborg Sweden
Israel Journal of Medical Sciences (ISR. J. MED. SCI.) 1973 , 9/6 (779-786)
CODEN: IJMDA
Document Type: Journal
Language: ENGLISH
Using a new method of intravital wireless telemetry of the axial forces in the Harrington distraction rod, information has been obtained from 11 patients during, and for 2 wks following, instrumental correction of scoliosis. The measurements presented have resulted in a principle of safety first in scoliosis surgery, using Harrington rods, which has proven effective in reducing complications during and after operation as well as subsequent loss of correction.

14/7/4 (Item 4 from file: 155)
Fulltext available through: USPTO Full Text Retrieval Options
MEDLINE(R)

04327624 PMID: 993225
Using the shape recovery of nitinol in the Harrington rod treatment of scoliosis.
Schmerling M A; Wilkov M A; Sanders A E; Woosley J E
Journal of biomedical materials research (UNITED STATES) Nov 1976 , 10 (6) p879-92
, ISSN: 0021-9304--Print Journal Code: 0112726
Publishing Model Print
Document type: Comparative Study; Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
Nitinol, a metal alloy which is able to remember (and return to with slight heating) the shape it had before it was deformed, is demonstrated to be useful in the Harrington rod treatment of scoliosis. A bent nitinol rod can return to its original straight length, applying both axial and lateral forces to the spine during the operation of postoperatively by means of external heating. A research program using simulated spinal forces in a test fixture and implantation in a cadaver was undertaken to show the feasibility of modifying the existing procedure.
Record Date Created: 19770129
Record Date Completed: 19770129

14/7/5 (Item 5 from file: 73)
EMBASE

01502823 EMBASE No: 1979224447
Force measurements during operative correction of spinal deformities
McBride G.G.; Dunn H.K.; Daniels A.U.
Div. Orthop. Surg., Univ. Utah Coll. Med., Salt Lake City, Ut. 84132 United States
Biomedical Sciences Instrumentation (BIOMED. SCI. INSTRUM.) (United States) 1979 ,
Vol. 15/- (19-24)
CODEN: BMSIA
Document Type: Journal

Language: ENGLISH
Force measurement devices were developed for use during surgical correction of spinal deformities and used in initial clinical trials. The devices are a standard outrigger and distractor outfitted with strain gages. The outrigger is a mechanical instrument used to apply force and gain initial correction of a spinal curve prior to application of a Harrington rod implant. The distractor is then used to advance hooks along notches on the implant to increase its length and thus maintain or increase the correcting force initiated with the outrigger. Strain gages were positioned to measure pure axial forces applied to the spine by the outrigger and by the implant as measured by the distractor. Operative forces measured in 20 clinical cases were occasionally sufficient to rupture the bone at points of outrigger or rod attachment or damage the rods. The data acquired indicate that the devices will allow application of maximum corrective force while avoiding bone rupture or implant damage and allow development of a more quantitative operative technique.

14/7/6 (Item 6 from file: 8)
Ei Compendex(R)

04651993 E.I. Monthly No: EIM8405-038070
Title: STAINLESS STEEL/TITANIUM ALLOY IMPLANT FOR NON-FUSION SURGERY IN SCOLIOSIS.
Author: McNeice, G. M.; Pilliar, R. M.; Gillespie, R.
Corporate Source: Univ of Waterloo, Waterloo, Ont, Can
Conference Title: Transactions of the 8th Annual Meeting of the Society for Biomaterials in conjunction with the 14th International Biomaterials Symposium.
Conference Location: Orlando, Fla, USA Conference Date: 19820424
Sponsor: Soc for Biomaterials, San Antonio, Tex, USA; Natl Inst for Dental Research, Bethesda, Md, USA
E.I. Conference No.: 03723
Source: Transactions of the Annual Meeting of the Society for Biomaterials in conjuction with the International Biomaterials Symposium v 5. Publ by Soc for Biomaterials, San Antonio, Tex, USA p 24
Publication Year: 1982
CODEN: TAMSEN
Language: English
Document Type: PA; (Conference Paper)
Journal Announcement: 8405

14/7/7 (Item 7 from file: 73)
EMBASE

02316634 EMBASE No: 1983247795
Comparison of segmental spinal instrumentation devices in the correction of scoliosis
Ogilvie J.W.; Millar E.A.
Chicago Unit, Shriners Hosp. Crippled Child., Minneapolis, MN United States
Spine (SPINE) (United States) 1983 , 8/4 (416-419)
CODEN: SPIND
Document Type: Journal
Language: ENGLISH
Harrington distraction rods with either sublaminar wires or convexity compression rods and transverse loading wires were used to treat idiopathic scoliotic patients. Laboratory measurement of transverse forces and orthographic projection of the apical vertebra enabled calculation of x- and y-plane forces in addition to torque. The construct utilizing sublaminar wires generated more favorable corrective vectors. Both devices tended to further rotate the scoliotic spine. Use of the compression apparatus should be limited to spines where reduction of kyphosis is desirable.

14/7/8 (Item 8 from file: 73)
EMBASE

02299867 EMBASE No: 1983231028
The use of segmental spinal instrumentation to preserve longitudinal spinal growth. An experimental study
McAfee P.C.; Lubicky J.P.; Werner F.W.
Dep. Orthop. Surg., State Univ. New York, Upstate Med. Cent., Syracuse, NY 13210 United States
Journal of Bone and Joint Surgery - Series A (J. BONE JT. SURG. SER. A) (United States) 1983 , 65/7 (935-942)
CODEN: JBJSA
Document Type: Journal
Language: ENGLISH
To study the application of Luque segmental spinal instrumentation without arthrodesis in the preservation of longitudinal vertebral growth, we performed one of several operations on three-month-old beagle hounds: Group I, subperiosteal para-spinal-muscle stripping; Group II, simulated segmental spinal-instrumentation exposure with the passage of sublaminar wires; Group III, Luque's method of segmental spinal instrumentation with contoured Luque rods; and Group IV, segmental spinal instrumentation with laminar wires not tightened completely around Luque rods. Radiographic measurement of the length of instrumented vertebral segments for nine months postoperatively demonstrated that progressive longitudinal vertebral growth was preserved. The per cent increase in spinal growth from the fifth to the eleventh thoracic vertebra was: Group I, 18.7 per cent; Group II, 20.0 per cent; Group III, 7.9 per cent; and Group IV, 16.0 per cent. Subperiosteal exposure of the posterior elements did not result in spontaneous spine fusion in a single animal. Mechanical testing at the age of one year showed that segmental spinal instrumentation provided an increased ability to resist combined compressive and rotational forces. Compared with previous reports of biomechanical testing of Harrington instrumentation, in segmental instrumentation the spinal segments failed in a location removed from the metal-bone interface, and usually as much as 170 degrees of rotation could be applied without failure of fixation. The spines that had Luque segmental spinal instrumentation with tightened wires (Group III) required the most torque to fail, had the largest linear torsional stiffness, and absorbed more energy than the other spines - energy absorbed before failure was 15.8 newton-meters in Group III, 8.0 newton-meters in Group I, 8.5 newton-meters in Group IV, and 3.7 newton-meters in Group II. The beagle hound provided a successful in vivo biological model for the observation of progressive vertebral growth after spinal instrumentation and served as an excellent ex vivo model for biomechanical testing. The successful treatment of severe scoliosis with Harrington instrumentation requires a solid arthrodesis that prevents further growth of the spine. This study suppports the theoretical benefit of Luque segmental spinal instrumentation, as progressive longitudinal growth can occur along an instrumented spinal segment without loss of fixation. Tightening the laminar wires to obtain maximum stability, however, retards the potential growth of the involved vertebral segment by evoking the Hueter-Volkmann principle.

14/7/9 (Item 9 from file: 5)
Fulltext available through: USPTO Full Text Retrieval Options
Biosis Previews(R)

08115309 Biosis No.: 198681079200
CYCLIC AXIAL LOADING OF SPINAL IMPLANTS
Author: NASCA R J (Reprint); HOLLIS J M; LEMONS J E; COOL T A
Author Address: 619 19TH ST SOUTH, BIRMINGHAM, ALA 35233, USA**USA

Journal: Spine 10 (9): p 792-798 1985
ISSN: 0362-2436
Document Type: Article
Record Type: Abstract
Language: ENGLISH
Abstract: The performance characteristics of Harrington distraction rods were evaluated and compared with paired wired L-rods when subjected to cyclic axial compression loading. Twelve fresh frozen swine spines with intact facet joints and anterior and posterior ligamentous complexes were instrumented and tested in a specially designed pneumatic testing device. Nine spines were displaced 2.54 cm over 10,000 cycles at a pressure at 10.3-13.8 kN/m2 (15-20 psi). Four spines were mounted in an Instron machine (Instron Engineering Corp., Canton MA). Load displacement curves were determined for each spine without instrumentation, with Harrington distraction rod with paired wired L-rods. Results of this cyclic axial compression testing showed that the Harrington distraction rod allowed 0.5 cm shortening in contrast to the L-rods that permitted 1.5 cm of axial displacement. Friction movement and metallic debris were noted between the sublaminal wires and the L-rods. The Luque Instrumented spine showed greater coronal plane displacement than the Harrington instrumented spines. Displacements in the sagittal plane were greater with Harrington than Luque instrumented spines. Rotation changes in the sagittal plane were greater with the Harrington than Luque instrumented spines. Load displacement curves done on four spines indicated a wide range of applied load, 356 N (80 lbs) to 712 N (160 lbs) being necessary to displace the spines 2.54 cm. The clinician should be aware that the Luque system does not resist imposed axial compression loading in the axial and coronal planes as well as the Harrington distraction rod. Approxiate external support to counteract these shortcomings appears to be justified for patients undergoing Luque instrumentation for correction of scoliosis and in managing unstable spinal fractures.

14/7/10 (Item 10 from file: 155)
Fulltext available through: USPTO Full Text Retrieval Options
MEDLINE(R)

06674779 PMID: 3975745
Segmental spinal instrumentation.
Nasca R J
Southern medical journal (UNITED STATES) Mar 1985 , 78 (3) p303-9 , ISSN: 0038-4348--Print Journal Code: 0404522
Publishing Model Print
Document type: Case Reports; Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
Over a 2 1/2-year period, I have treated 25 patients with segmental spinal instrumentation (SSI), using paired-wired Luque rods. Of 13 patients with unstable spinal fractures, seven were paraplegic. Nine had idiopathic scoliosis, and three had neurogenic scoliosis. Significant loss of correction after SSI occurred in five of the nine patients with idiopathic scoliosis and in two of the three with neurogenic scoliosis. In vitro testing of Harrington distraction rods and paired-wired L-shaped rods showed the Harrington rod to resist shortening and lateral bending due to axial compression forces better than the Luque system. From the study I conclude that postoperative brace protection is as necessary to the success of SSI as with the more traditional Harrington technique. Segmental spinal instrumentation is a powerful corrective device, but appears to be deficient in maintaining correction.
Record Date Created: 19850419
Record Date Completed: 19850419

14/7/11 (Item 11 from file: 155)
Fulltext available through: USPTO Full Text Retrieval Options
MEDLINE(R)

07816135 PMID: 3417703
Biomechanical analysis of anterior and posterior instrumentation systems after corpectomy. A calf-spine model.
Gurr K R; McAfee P C; Shih C M
Department of Orthopaedic Surgery, Johns Hopkins University School of Medicine, Baltimore.
Journal of bone and joint surgery. American volume (UNITED STATES) Sep 1988 , 70 (8) p1182-91 , ISSN: 0021-9355--Print Journal Code: 0014030
Contract/Grant No.: 1 R29 AR38489-01; AR; NIAMS
Publishing Model Print
Document type: Journal Article; Research Support, Non-U.S. Gov't; Research Support, U.S. Gov't, P.H.S.
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
To simulate the spinal instability that is found clinically after anterior corpectomy for the treatment of a fracture or a neoplasm, twelve fresh calf-spine segments, each containing five motion segments, were destabilized using a complete anterior corpectomy at the third lumbar level and anterior discectomies at the second and third and the third and fourth lumbar levels. Mechanical non-destructive cyclical testing in axial compression, rotation, and flexion was performed on each spinal segment after stabilization was accomplished. The three anterior-stabilization constructs that were compared were: (1) iliac strut grafting, (2) polymethylmethacrylate and anterior Harrington-rod instrumentation (the technique of Siegal and Siegal), and (3) the Kaneda anterior device. After anterior iliac-crest strut grafting, four types of posterior instrumentation were also tested sequentially: (1) Harrington distraction rods, (2) Luque rectangular instrumentation, (3) Cotrel-Dubousset transpedicular instrumentation, and (4) Steffee transpedicular screws and plates. Rotation, torque, axial displacement, and axial loads were measured during loading across the whole spinal segment between the grip points. Using an anterior extensometer, intervertebral displacement at the second, third, and fourth lumbar levels, and thus across the corpectomy defect at the third lumbar level, was recorded "on line" during testing in flexion and axial load. By recording the intervertebral displacement, the efficacy of each spinal construct in minimizing motion across the corpectomy defect could be quantified. The value for one-way analysis of variance for axial intervertebral displacement across the site of the third lumbar corpectomy was F = 10.5, p less than 0.001. The value for one-way analysis of variance for flexural intervertebral displacement across the corpectomy defect was F = 21.1, p less than 0.001. Homogeneous subsets of rigidity for torsional stiffness revealed that the least rigid constructs were iliac grafting alone, Harrington-rod instrumentation, and Luque rectangular instrumentation. The most rigid constructs were the anterior Kaneda device, transpedicular Cotrel-Dubousset instrumentation, and Steffee screws and plates. CLINICAL RELEVANCE: After corpectomy, spinal reconstructive surgery can restore axial, torsional, and flexural rigidity to normal levels. These experimental conclusions applied to the acute restoration of stability, rather than to rigidity after long-term cyclical loading. Using the most rigid anterior system, the Kaneda device, the fixation extended only one vertebral level cephalad and one level caudad to the corpectomy defect.(ABSTRACT TRUNCATED AT 400 WORDS)
Record Date Created: 19881027
Record Date Completed: 19881027

14/7/13 (Item 13 from file: 155)

Fulltext available through: USPTO Full Text Retrieval Options
MEDLINE(R)

09455983 PMID: 1440005
Chiba Spinal System in the operative management of scoliosis.
Nakata Y; Moriya H; Kitahara H; Minami S; Takahashi K; Ohtsuka Y
Department of Orthopaedic Surgery, School of Medicine, Chiba University, Japan.
Spine (UNITED STATES) Oct 1992 , 17 (10) p1166-73 , ISSN: 0362-2436--Print
Journal Code: 7610646
Publishing Model Print
Document type: Case Reports; Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
The Chiba Spinal System was developed for three-dimensional correction of scoliosis. The system consists of a 7-mm diameter smooth solid rod, closed and open hooks, and specially designed conical sleeves. The rod does not have ratchets or threads, thus minimizing stress concentrations. The closed and open hooks are attached to the rod using the conical sleeves. The sleeves have longitudinal slits permitting compression during insertion. The outrigger system with a torque wrench is used to correct the deformity in the frontal plane. When correcting lordosis with vertebral rotation, a sagittal correction device may be used. Fifty-two patients with idiopathic scoliosis were operated on with this system from 1986 through 1989. The average correction of the scoliosis was 58%. For the 21 patients with thoracic lordosis less than 0 degrees, the mean preoperative lordosis was -8 degrees, which was corrected to +7 degrees. The mean correction of the vertebral rotation was 24%. Two patients complained of paresthesia of the thoracic region after operation, but this disappeared within 2 weeks. In 32 patients with more than 2 years' follow-up, the mean loss of correction was 3 degrees. One case with instrumentation failure was noted.
Record Date Created: 19921204
Record Date Completed: 19921204

14/7/22 (Item 22 from file: 155)
Fulltext available through: USPTO Full Text Retrieval Options
MEDLINE(R)

10607226 PMID: 7552656
CDH: preliminary report on a new anterior spinal instrumentation.
Hopf A; Eysel P; Dubousset J
Orthopadische Universitatsklinik, Mainz, Germany.
European spine journal - official publication of the European Spine Society, the European Spinal Deformity Society, and the European Section of the Cervical Spine Research Society (GERMANY) 1995 , 4 (3) p194-9 , ISSN: 0940-6719--Print Journal Code: 9301980
Publishing Model Print
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
CDH (Cotrel-Dubousset-Hopf) instrumentation was developed with the aim of improving stability in ventral operation procedure and facilitating treatment of all anterior spinal diseases. The implantation of anterior plates and drawers, the use of a double-rod fixation within the implant in nonparallel directions, which provide an automatic locking mechanism against displacement, the prevention of dislocation of the cancellous bone srews, and the crosslink principle are its main characteristics. The device can be applied to the spine in accordance with its three-dimensional anatomy by any kind of force (distraction, compression, and rotation). Additional posterior instrumentation and

postoperative external support are unnecessary in most cases because of improved stability. No reoperation was necessary following the mono- and multisegmental application of this method in 60 patients (28 with scoliosis, 12 with spondylodiscitis, 8 with primary tumors or isolated metastasis, 6 with fractures, 3 with failed back syndrome, 1 with kyphotic deformity, 1 with spondylolisthesis on two levels, and 1 with loss of correction after the dislocation of another posterior spinal instrumentation). Average blood loss was 950 ml; the average operating time was 3 h. In all, 16 monosegmental and 44 multisegmental procedures were carried out. In 25 patients, in particular those with paralytic scoliosis, a double-stage anterior and posterior spondylodesis was done.
Record Date Created: 19951101
Record Date Completed: 19951101

14/7/23 (Item 23 from file: 155)
Fulltext available through: USPTO Full Text Retrieval Options
MEDLINE(R)

11060183 PMID: 8883194
In situ rigidity of a new sliding rod for management of the growing spine in Duchenne muscular dystrophy.
Wilke H J; Kluger P; Naumann T; Kron T; Claes L E; Puhl W
Department Unfallchirurgische Forschung und Biomechanik, University of Ulm, Germany.
Spine (UNITED STATES) Sep 1 1996 , 21 (17) p1957-61 , ISSN: 0362-2436--Print
Journal Code: 7610646
Publishing Model Print
Document type: Journal Article; Research Support, Non-U.S. Gov't
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
STUDY DESIGN: This biomechanical, in vitro laboratory study determined the static stiffness of a new telescoping rod and the axial motion of this implant during various loading conditions. OBJECTIVES: To compare the stability of the new telescoping rod with the classic Luque instrumentation, and to determine whether the sliding rod elongates or contracts during spine motion. SUMMARY OF BACKGROUND DATA: A new telescoping rod was developed to stabilize the spine in children with Duchenne muscular dystrophy and to provide capacity for spinal growth. METHODS: The stability of 11 instrumented calf spines was determined in flexion, extension, lateral bending, and torsion to determine the stiffnesses of the spines instrumented with these two implants. The telescoping motion in the left and right rod was measured in the new rod system. RESULTS: In flexion, the spines with the telescoping rods were stiffer than those with the Luque implant. However, no significant differences in the stiffness coefficients were found for extension, lateral bending, or torsion. The restoring force of the telescoping system was greater than that of the Luque system in all directions. All modes of loading produced an accommodating change of length in the construct. CONCLUSIONS: The dynamic telescoping system provides stiffness comparable with that of established systems while allowing elongation during growth of the young patient.
Record Date Created: 19970127
Record Date Completed: 19970127

14/7/24 (Item 24 from file: 73)
Fulltext available through: USPTO Full Text Retrieval Options
EMBASE

07158257 EMBASE No: 1998047869
Biomechanical evaluation of posterior cervical stabilization after a wide laminectomy

Grubb M.R.; Currier B.L.; Stone J.; Warden K.E.; An K.-N.
Dr. B.L. Currier, Mayo Clinic, 200 First Street SW, Rochester, MN 55905 United States
Spine (SPINE) (United States) 1997 , 22/17 (1948-1954)
CODEN: SPIND ISSN: 0362-2436
Document Type: Journal ; Article
Language: ENGLISH Summary Language: ENGLISH
Number Of References: 35
Study Design: In vitro biomechanical investigation with nondestructive and destructive testing in a human cadaverio model simulating wide postlaminectomy condition. Objectives. To determine the relative stability conferred by a posterior cervical spinal rod system and posterior cervical plating. Summary of Background Data. Posterior cervical plate fixation has been shown to be biomechanically superior to wiling techniques but lateral mass screws may injure neurovascular structures or facet joints if they are inserted improperly. A cervical rod system has been developed to enhance the safety of lateral mass instrumentation. Methods. The cervical spines of 12 cadavers under went biomechanical testing. After completion of the nondestructive intact testing; a wide laminectomy with subtotal facetectomies from C4 to C6 was performed. The specimens in two subgroups (group A, cervical spine rods with unicortical fixation, and group B reconstruction plates with bicortical fixation) were tested in flexion, lateral bending and torsion. Finally destructive testing inflexion was performed. Stiffness, neutral zone failure moment, energy to failure, and mechanism of failure were determined for each specimen. The data were analyzed using paired tests and ANOVA. Results. Group B had a greater mean screw, torque value. The instrumented constructs had a greater stiffness ratio (instrumented/intact) then the intact specimens in flexion, lateral bending, and torsional testing. Group A had a significantly greater flexural stiffness than Group B. Neutral zone ratio values were significantly lower during flexural testing for the cervical rod construct. Destructive testing resulted in significantly grater failure moment and energy to failure values for group A. In the cervical rod construct failure occurred primarily by superior screw loosening with pull- out from the lateral mass. Reconstruction plates consistently failed with fracture of the lateral mass and superior screw loosening. Conclusion. Significantly greater stability was noted in the cervical rod construct during nondestructive and destructive flexural testing.

14/7/25 (Item 25 from file: 8)
Ei Compendex(R)

08198795 E.I. No: EIP99014522070
Title: In vitro quasi-static and cyclic biomechanics of a cervical spine posterior plate versus facet wiring in a laminectomy model
Author: Scifert, Jeffrey L.; Smith, Darin W.; Goel, Vijay K.; Traynelis, Vincent C.
Corporate Source: Univ of Iowa, Iowa City, IA, USA
Conference Title: Proceedings of the 1998 ASME International Mechanical Engineering Congress and Exposition
Conference Location: Anaheim, CA, USA Conference Date: 19981115-19981120
Sponsor: ASME
E.I. Conference No.: 49454
Source: Advances in Bioengineering American Society of Mechanical Engineers, Bioengineering Division (Publication) BED v 39 1998. ASME, Fairfield, NJ, USA. p 209-210
Publication Year: 1998
CODEN: ASMBEP
Language: English
Document Type: CA; (Conference Article) Treatment: X; (Experimental)
Journal Announcement: 9902W4
Abstract: Stability comparisons of cervical facet wiring and posterior cervical plating in a quasi-static and cyclic environment contain important clinical ramifications and this research addresses this issue. Decreases in motion at C4-C5 after undergoing

bilateral laminectomy and subsequent stabilization indicated that plate decreases in motion were markedly higher than facet wiring decreases in all cases except cyclic extension. Posterior plates were superior in almost every loading mode tested, including the cyclic mode. The stabilized and cyclic results were only similar in extension between plates and wires. Screw torque decreases between pre- and post-fatigue plate measurements did not appear to affect specimen stability. Posterior plates appear to be biomechanically superior to facet wiring in cervical spine stabilization following laminectomy. (Author abstract)

14/7/26 (Item 26 from file: 8)
Ei Compendex(R)

08516758 E.I. No: EIP00045106422
Title: Instrumented rod rotator
Author: Lou, E.; Duke, K.K.; Hill, D.L.; Raso, V.J.; Durdle, N.G.; Moreau, M.J.; Mahood, J.K.; Budney, D.L.
Corporate Source: CHA-Glenrose Rehab. Hospital, Edmonton, Alberta, Can
Conference Title: 1999 IEEE Canadian Conference on Electrical and Computer Engineering 'Engineering Solutions for the Next Millennium'
Conference Location: Edmonton, Alberta, Can Conference Date: 19990509-19990512
E.I. Conference No.: 56427
Source: Canadian Conference on Electrical and Computer Engineering v 3 1999. p 1506-1510
Publication Year: 1999
CODEN: CCCEFV ISSN: 0840-7789
Language: English
Document Type: JA; (Journal Article) Treatment: A; (Applications); G; (General Review)
Journal Announcement: 0005W3
Abstract: An electronically instrumented rod rotator has been developed to monitor forces and moments applied by surgeons during spinal surgery . This instrumented rod rotator consists of an inclinometer and two pairs of strain gauges with all the support circuitry. The strain gauge data and the inclinometer are sampled with a data acquisition system and the results are displayed in real time. The device has been calibrated in the laboratory and used on seven patients. The precision of the load measurement of this device is plus or minus 5N in the range of 5 to 65N. The maximum loads applied by the surgeon during those seven surgeries are from 20 to 60N with a torque from 4 to 11Nm. (Author abstract) 3 Refs.

14/7/27 (Item 27 from file: 73)
Fulltext available through: USPTO Full Text Retrieval Options
EMBASE

07708783 EMBASE No: 1999191553
Posterior cervical arthrodesis and stabilization: An early report using a novel lateral mass screw and rod technique
Horgan M.A.; Kellogg J.X.; Chesnut R.M.; Cooper P.R.; Baldwin N.G.; Sonntag V.K.H.; Fessler R.G.
Dr. M.A. Horgan, Department of Neurosurgery, Oregon Health Sciences University, 3181 SW Sam Jackson Park Road, Portland, OR 97201-3098 United States
Neurosurgery (NEUROSURGERY) (United States) 1999 , 44/6 (1267-1272)
CODEN: NRSRD ISSN: 0148-396X
Document Type: Journal ; Article
Language: ENGLISH Summary Language: ENGLISH
Number Of References: 15
OBJECTIVE: Posterior cervical arthrodesis and stabilization with lateral mass plates is a biomechanically sound construct in multiple planes of motion. It is reproducible and

especially useful when the posterior elements are missing or fractured. Unfortunately, it is difficult to use in patients with severe degenerative spondylosis because the plate is malleable only in the sagittal plane and the screw positions are dictated by the plate's entry holes. METHODS: A novel system of lateral mass screws that can be positioned before placement of a lateral construct was used in nine patients. Their outcomes as well as the technical applications of this system were reviewed. RESULTS: A total of 52 screws were placed in nine patients who underwent posterior cervical arthrodesis with the Cervifix system (Synthes USA, Paoli, PA). Diagnoses included trauma in four patients, degenerative spondylosis in three, and tumor in two. Rods were molded individually according to the patient's anatomy. Compression, distraction, and lateral rotation, if indicated, were performed. Follow-up averaged 36 weeks. Lateral and anteroposterior radiographs, obtained at progressive intervals, revealed excellent fixation and screw purchase without pull-out. There were no cases of spinal cord, nerve root, or vertebral artery injury. CONCLUSION: The Cervifix system accommodates variation in anatomic size and spacing of the lateral masses, potentiating precise screw placement. The rods can be molded in multiple planes, and selective application of compressive, distractive, or lateral rotatory forces is allowed. The system is very straightforward and simple to use, and we have had good success without pseudarthrosis or complications from screw placement in our series.

14/7/32 (Item 32 from file: 35)
Dissertation Abs Online

01844600 ORDER NO: AADAA-IMQ60422
The design of instrumentation for force measurement during scoliosis surgery
Author: Duke, Kajsa Kelly
Degree: M.Sc.
Year: 2001
Corporate Source/Institution: University of Alberta (Canada) (0351)
Adviser: Ken Fyfe
Source: Volume 40/01 of MASTERS ABSTRACTS. of Dissertations Abstracts International.
PAGE 199 . 114 PAGES
ISBN: 0-612-60422-5

Scoliosis surgery involves fixation of various hooks, screws and rods to straighten the ‘S’ shaped spine. The procedure is controlled by the surgeons' skill and feel, as they are unaware of the applied forces. The object of this thesis was to design instruments capable of measuring forces and moments applied during scoliosis surgery.

An instrument called the Gripper, housing strain gauges, was fit over a rod rotator to measure the forces and moments. The Gripper was tested on 17 patients where the average maximum force and moments applied were 39 (±14) N and 8 (±1) Nm respectively.

Finite element analysis (FEA) was used to aid in designing a hook capable of measuring the forces at the vertebral level. Preliminary results, from the Plate hook, show the largest moments are applied on insertion and removal of the hook, reaching a maximum of 1.1 Nm. The largest axial force observed was 370 N. Time traces of forces and moments produced by the Gripper and the Plate hook provided insight on scoliosis surgery mechanics.

14/7/34 (Item 34 from file: 155)
Fulltext available through: USPTO Full Text Retrieval Options
MEDLINE(R)

13593964 PMID: 14588343
Biomechanical comparison of anterior cervical plating and combined anterior/lateral mass plating.

Adams M S; Crawford N R; Chamberlain R H; Bse; Sonntag V K; Dickman C A
Spinal Biomechanics Research Laboratory, Barrow Neurological Institute, 350 W. Thomas Road, Phoenix, AZ 85013, USA.
spine journal - official journal of the North American Spine Society (United States) May-Jun 2001 , 1 (3) p166-70 , ISSN: 1529-9430--Print Journal Code: 101130732
Publishing Model Print
Document type: Comparative Study; Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
BACKGROUND CONTEXT: Previous studies showed anterior plates of older design to be inadequate for stabilizing the cervical spine in all loading directions. No studies have investigated enhancement in stability obtained by combining anterior and posterior plates. PURPOSE: To determine which modes of loading are stabilized by anterior plating after a cervical burst fracture and to determine whether adding posterior plating further significantly stabilizes the construct. STUDY DESIGN/SETTING: A repeated-measures in vitro biomechanical flexibility experiment was performed to investigate how surgical destabilization and subsequent addition of hardware components alter spinal stability. PATIENT SAMPLE: Six human cadaveric specimens were studied. OUTCOME MEASURES: Angular range of motion (ROM) and neutral zone (NZ) were quantified during flexion, extension, lateral bending, and axial rotation. METHODS: Nonconstraining, nondestructive torques were applied while recording three-dimensional motion optoelectronically. Specimens were tested intact, destabilized by simulated burst fracture with posterior distraction, plated anteriorly with a unicortical locking system, and plated with a combined anterior/posterior construct. RESULTS: The anterior plate significantly ($p<.05$) reduced the ROM relative to normal in all modes of loading and significantly reduced the NZ in flexion and extension. Addition of the posterior plates further significantly reduced the ROM in all modes of loading and reduced the NZ in lateral bending. CONCLUSIONS: Anterior plating systems are capable of substantially stabilizing the cervical spine in all modes of loading after a burst fracture. The combined approach adds significant stability over anterior plating alone in treating this injury but may be unnecessary clinically. Further study is needed to assess the added clinical benefits of the combined approach and associated risks.
Record Date Created: 20031031
Record Date Completed: 20040623

14/7/35 (Item 35 from file: 155)
Fulltext available through: USPTO Full Text Retrieval Options
MEDLINE(R)

13524621 PMID: 11778317
[Mechanical study of spinal interbody implants--characteristics and limits of standardized testing]
Mechanische Untersuchung von interkorporellen Wirbelsaulen- Implantaten--Besonderheiten und Grenzen einer normgerechten Testung.
Steinhauser E; Bader R; Rechl H; Bertagnoli R; Mittelmeier W; Gradinger R
Klinik fur Orthopadie und Sportorthopadie, Technische Universitat Munchen. erwin.steinhauser@lrz.tum.de
Biomedizinische Technik. Biomedical engineering (Germany) Nov 2001 , 46 (11) p325-32 , ISSN: 0013-5585--Print Journal Code: 1262533
Publishing Model Print
Document type: English Abstract; Journal Article
Languages: GERMAN
Main Citation Owner: NLM
Record type: MEDLINE; Completed
Spinal interbody fusion has proved to be a useful procedure for the surgical

stabilization of spinal segments, for which fusion cases made of metal or reinforced polymers are increasingly being used. For the mechanical testing of spinal interbody implants, a test setup has been developed on the basis of an ASTM proposal. Initially, testing of lumbar fusion cages made of CFRP (carbon fibre reinforced polymer) was carried out. The implants (UNION Cages, Medtronic Sofamor Danek), which are characterised by their radiolucency on radiography, NMR and CT scans, have a cube-shaped body with three table-tracks on the under and upper surfaces. The cages were tested at different loads. Modifications of the proposed standardized method were carried out to enable implementation of implant-oriented testing. The tested cages were shown to have adequate axial compression, shear and torsional strengths with regard to the implant body. The maximum axial compression force tolerated by the table-tracks was less than the maximal potential loading of the lumbar spine, and, with account being taken of implant design, consequences with regard to surgical technique were drawn. As dictated by the geometry of the table-tracks, parallel grooves have to be made intra-operatively in the vertebral end plates. Axial compressive loads then act on the implant body, and the table-tracks are protected from damage. To avoid in vivo failure, the tested cages should be implanted only when this specific surgical technique is employed. Using supplementary anterior or posterior instrumentation, in vivo failure of the table-tracks under physiological spinal loading is not to be expected.
Record Date Created: 20020107
Record Date Completed: 20020222

14/7/36 (Item 36 from file: 155)
Fulltext available through: USPTO Full Text Retrieval Options
MEDLINE(R)

13504202 PMID: 11740358
Biomechanical evaluation of anterior spinal instrumentation systems for scoliosis: in vitro fatigue simulation.
Shimamoto N; Kotani Y; Shono Y; Kadoya K; Abumi K; Kaneda K; Minami A
Department of Orthopaedic Surgery, Hokkaido Graduate University School of Medicine, Sapporo, Japan. nori123go@aol.com
Spine (United States) Dec 15 2001 , 26 (24) p2701-8 , ISSN: 0362-2436--Print
Journal Code: 7610646
Publishing Model Print; Comment in Spine. 2002 Sep 1;27(17) 1953-4; Comment in PMID 12221370
Document type: Comparative Study; Evaluation Studies; In Vitro; Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
STUDY DESIGN: A biomechanical study was designed to assess the bone-screw interface fixation strength among five anterior spinal instrumentation systems for scoliosis before and after a fatigue simulation. OBJECTIVES: The objectives of the current study were twofold: 1) evaluate the static (initial) strength at the bone-screw interface and 2) evaluate dynamic (post fatigue) strength of the bone-screw interface after a fatigue simulation to investigate a possible mechanism for postoperative loss of correction. SUMMARY OF BACKGROUND DATA: Although the recent advancement of anterior instrumentation for scoliosis has permitted shorter fusion segments and improved surgical correction, the loss of correction over the instrumented segments still has been reported in one-rod systems. Little is known about the mechanism for loss of correction. METHODS: Twenty-five fresh-frozen calf spines (T6-L6) were used. A total of five instrumentation systems included the following: Anterior ISOLA (ISOLA), Bad Wildungen Metz (BWM), Texas Scottish Rite Hospital system (TSRH), Cotrel-Dubousset Hoph (CDH), and Kaneda Anterior Scoliosis System (KASS). Screw pullout and rotational tests in the sagittal plane using a single vertebra were performed to investigate bone-screw interface fixation strength before and after a fatigue simulation. To simulate cyclic loading that the spine could undergo in

vivo, a fatigue simulation using compressive-flexion loading up to 24,000 cycles was carried out. RESULTS: Mean maximum tensile pullout force decreased in the following order: KASS > CDH > BWM > TSRH > ISOLA (F = 29.91, P < 0.0001). KASS blunt tip screw was 26% stronger in pullout force than KASS sharp tip screw (P < 0.05). The one-rod system demonstrated a positive correlation between pullout force and both bone mineral density and screw insertional torque. For fatigue analysis the rotational strength at the most cephalad and caudal segments significantly decreased after a fatigue simulation in the one-rod system (P < 0.05). The two- rod system showed no significant decrease after a fatigue simulation. CONCLUSIONS: Simulating the cyclic loading to the construct, screw loosening at the bone-screw interface was produced in the one- rod system. This screw loosening may elucidate one mechanism for loss of correction in the one-rod system. The two-rod system may have the potential to minimize the risk of loss of correction.
Record Date Created: 20011213
Record Date Completed: 20020221

14/7/38 (Item 38 from file: 155)
Fulltext available through: USPTO Full Text Retrieval Options
MEDLINE(R)

13927581 PMID: 12227622
Instrumented rod rotator system for spinal surgery.
Lou E; Hill D L; Raso J V; Moreau M J; Mahood J K
Capital Health Authority, Glenrose Rehabilitation Hospital, Edmonton, Alberta, Canada.
Edmond lou@shaw.ca
Medical & biological engineering & computing (England) Jul 2002 , 40 (4) p376-9 ,
ISSN: 0140-0118--Print Journal Code: 7704869
Publishing Model Print
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
An electronically instrumented rod rotator has been developed to monitor forces and moments applied by surgeons during the derotation manoeuver to correct spinal curvature. This instrumented rod rotator consisted of an inclinometer and two pairs of strain gauges, with all the support circuitry. The strain gauge and the inclinometer data were sampled with a data-acquisition system, and the results were displayed in real time. The device was calibrated in the laboratory and used on seven subjects. The precision of the load measurement of this device was +/- 5 N in the range of 5-65N. The distance between the middle of the rod rotator handle to the rod position was 0.21 m. The maximum loads applied by the surgeon during seven surgeries were from 22 to 57N, with a torque (force x distance) from 4.6 to 12 Nm.
Record Date Created: 20020913
Record Date Completed: 20020930

14/7/41 (Item 41 from file: 73)
Fulltext available through: USPTO Full Text Retrieval Options
EMBASE

12153302 EMBASE No: 2003266321
Biomechanical comparision of the stable efficacy of two anterior plating systems
Yang S.; Wang L.-W.
S. Yang, Institute of Biomedical Engineering, National Yang-Ming University, 155 Sec. 2 Li-Nung St., Taipei 112 Taiwan
Author Email: swyang@bme.ym.edu.tw
Clinical Biomechanics (CLIN. BIOMECH.) (United Kingdom) 2003 , 18/6 (S59-S66)

CODEN: CLBIE ISSN: 0268-0033
Document Type: Journal ; Conference Paper
Language: ENGLISH Summary Language: ENGLISH
Number Of References: 31
Objective. To compare the immediate stable efficacy and load sharing effect of two types of anterior cervical screw-plating instrumentations: the Morscher Synthes titanium locking screw-plate system and the Caspar trapezoidal screw-plate system. Design. Fresh porcine cervical spines with intact, two surgery unstable models, and then reconstructed with or without screw-plating instruments were compared in three physiological loading conditions. Background. Two markedly instrumentation systems - Morscher Synthes titanium cervical locking screw- plate and Caspar trapezoidal screw-plate systems are commonly used in management of complex cervical spine disorders. Although the biomechanical study showed that the lower cost Caspar system performed superior in extension before and after plate fatigue, the clinic evaluations of two systems were contradictory. So (1) does the titanium cervical locking plate system pay for its higher cost? and (2) what is the load sharing character of strut graft in one level corpectomy? Methods. Eight fresh ligamentous porcine cervical spines from C3 to C7 were undergone axial compression, rotation and sagittal flexion tests. The biomechanical experiment was sequentially repeated for the intact, C5-6 discectomy, C5 corpectomy, and then stabilized by either type of plate fixation devices with or without polymethylmethacrylate bone cement grafting. Strains measured by an extensometer across the operated motion segment were used as the index of stability. Results. Analysis of the strain data showed both types of anterior fixation plate systems provided adequate-restored stability for the spinal column only aided with polymethylmethacrylate construction. Statistically, there was no significant difference in biomechanical evaluation for the stability effect between much cost Morscher Synthes plate and Caspar plate system ($p<0.005$). The spinal disc bore as much as 75% of axial loading. While the strut graft functioned as the disc substitute and spacer, it bore more than 90% of axial loading. In high degree of flexion, the transmitted compressive load was shifted anteriorly to the screw- plate. This might unload the polymethylmethacrylate graft and resulted in the strut graft in tensile fatigue failure. Conclusions. Statistically both systems showed similar stable efficacy, however, the Morscher Synthes cervical locking plate system might provide better stable effect in higher degrees of flexion motion. The strut graft played as the major load-bearing role in axial compression and sagittal flexion, while in axial rotation, the applied torque was mainly resisted by facet joint and screw-plate system complex. Relevance: The minor discrepancy of two plating systems may be due to the nature of plate geometry and design but not the material properties. Combination of bone graft and either plating systems provides adequate fusion stability under physiological loadings. The high degree flexion may cause the posterior portion of polymethylmethacrylate graft in tensile fracture and then result in polymethylmethacrylate failure in clinic observation.

14/7/42 (Item 42 from file: 35)
Dissertation Abs Online

01962426 ORDER NO: AADAA-INQ81715
Analyse biomecanique de la flexibilite du rachis scoliotique pour la planification de l'instrumentation chirurgicale (French text)
Author: Petit, Yvan
Degree: Ph.D.
Year: 2003
Corporate Source/Institution: Ecole Polytechnique, Montreal (Canada) (1105)
Directeur: Carl-Eric Aubin
Source: Volume 6407B of Dissertations Abstracts International.
PAGE 3388 . 197 PAGES
Language: French

ISBN: 0-612-81715-6

The main objective of this thesis is to develop tools to estimate the flexibility of the scoliotic spine for the planning of surgical instrumentation. The hypotheses tested in this thesis are: that the segmental flexibility of the scoliotic spine affects the correction following the surgical instrumentation and that a biomechanical model of the surgical instrumentation incorporating patient-specific geometric and mechanical properties could estimate adequately the correction for the planning of surgical instrumentation.

A novel method was developed for the identification of patient-specific mechanical properties of the scoliotic spine using a multi-body model. Vertebrae were represented as rigid bodies and intervertebral elements were defined using a spherical joint and three torsion springs. The initial mechanical properties of motion segments were defined from <italic>in-vitro</italic> experimental data reported in the literature. They were adjusted using an optimization algorithm to reproduce the reducibility of scoliotic deformities measured on the lateral bending radiographs. The personalized model was then used to simulate the surgical instrumentation and to investigate on the relationships between the segmental flexibility of the scoliotic spine and the correction following the surgical instrumentation.

The adjustment of the mechanical parameters of 10 scoliotic patients allowed reducing of 50% the sum of the squared differences between simulated and experimentally measured Ferguson angles in lateral bending. The classification of the flexibility of spine segments based on the computed mechanical modulation parameters (α_i) allowed to discriminate flexible (α ≤ 0,8) and rigid (α ≥ 1,2) scoliotic curves. This study shows that the inter-individual variability of the scoliotic spine flexural rigidity is important (α_i = 2,5 ± 2,0) and should be considered into biomechanical models.

The simulation of the surgical instrumentation maneuvers of 7 scoliotic patients adequately predicted the surgical correction. Differences between the simulated and measured Ferguson angles in the frontal and the sagittal planes respectively were 2,3° ± 2,0° and 2,2° ± 4,1° before the adjustment of mechanical properties. The personalization slightly improved the Ferguson angles predicted in the frontal plane (1° ± 4°) and the sagittal plane (2,0° ± 3,9°) but no significant change was observed for the plane of maximum curvature. The model also predicts plausible torque reactions (from 0,2 Nm to 28 Nm) and lateral forces (≤611 N except for one patient) between the rod and the implant during the rod rotation and translation maneuvers. (Abstract shortened by UMI.)

14/7/48 (Item 48 from file: 155)
Fulltext available through: USPTO Full Text Retrieval Options
MEDLINE(R)

14212286 PMID: 12623435
Biomechanical modeling of posterior instrumentation of the scoliotic spine.
Aubin C-E; Petit Y; Stokes I A F; Poulin F; Gardner-Morse M; Labelle H
Research Center, Sainte-Justine Hospital, Mother-Child University Hospital, University of Montreal, 3175, Cote Sainte-Catherine Rd, Montreal, Quebec, Canada H3T 1C5. carl-eric.aubin@polymtl.ca
Computer methods in biomechanics and biomedical engineering (Netherlands) Feb 2003 , 6 (1) p27-32 , ISSN: 1025-5842--Print Journal Code: 9802899
Publishing Model Print
Document type: Clinical Trial; Comparative Study; Journal Article; Research Support, Non-U.S. Gov't; Validation Studies
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
Scoliosis is a three-dimensional deformation of the spine that can be treated by

vertebral fusion using surgical instrumentation. However, the optimal configuration of instrumentation remains controversial. Simulating the surgical maneuvers with personalized biomechanical models may provide an analytical tool to determine instrumentation configuration during the pre-operative planning. Finite element models used in surgical simulations display convergence difficulties as a result of discontinuities and stiffness differences between elements. A kinetic model using flexible mechanisms has been developed to address this problem, and this study presents its use in the simulation of Cotrel-Dubousset Horizon surgical maneuvers. The model of the spine is composed of rigid bodies corresponding to the thoracic and lumbar vertebrae, and flexible elements representing the intervertebral structures. The model was personalized to the geometry of three scoliotic patients (with a thoracic Cobb angle of 45 degrees, 49 degrees and 39 degrees). Binary joints and kinematic constraints were used to represent the rod-implant-vertebra joints. The correction procedure was simulated using three steps: (1) Translation of hooks and screws on the first rod; (2) 90 degrees rod rotation; (3) Hooks and screws look-up on the rod. After the simulation, slight differences of 0-6 degrees were found for the thoracic spine scoliosis and the kyphosis, and of 1-8 degrees for the axial rotation of the apical vertebra and for the orientation of the plane of maximum deformity, compared to the real post-operative shape of the patient. Reaction loads at the vertebra-implant link were mostly below 1000 N, while reaction loads at the boundary conditions (representing the overall action of the surgeon) were in the range 7-470 N and maximum torque applied to the rod was 1.8 Nm. This kinetic modeling approach using flexible mechanisms provided a realistic representation of the surgical maneuvers. It may offer a tool to predict spinal geometry correction and assist in the pre-operative planning of surgical instrumentation of the scoliotic spine.
Record Date Created: 20030307
Record Date Completed: 20030926

Set	Items	Description
S1	45238	S (SPINE OR SPINAL)(2N)(POSITION? OR STABILI?) OR SCOLIOSIS OR SCOLIOTIC
S2	7018317	S IMPLANT? OR SURGERY OR SURGICAL??
S3	1158524	S PLATE OR PLATES OR ROD OR RODS OR SPRINGPLATE? ? OR SPRINGROD? ?
S4	55272	S (TWIST???? OR ROTAT???? OR AXIAL?? OR TORSION? OR TURN????)(1W)(FORCE OR FORCES OR MOVEMENT? ?) OR TORQUE?
S5	3	S DEROTATION?()FORCE? ?
S6	2	S S1 AND S2 AND S5
S7	1	S S5 NOT S6
S8	16	S S1 AND S3(5N)S4
S9	16	S S2 AND S8
S10	9	RD (unique items)
S11	16	S S9 NOT S5
S12	9	SORT S10/ALL/PY,A

6/7/1 (Item 1 from file: 155)
Fulltext available through: USPTO Full Text Retrieval Options
MEDLINE(R)

11234630 PMID: 9122782
Rotational changes of the vertebral pelvic axis after sublaminar instrumentation in adolescent idiopathic scoliosis.
Wood K B; Olsewski J M; Schendel M J; Boachie-Adjei O; Gupta M
Montefiore Medical Center, Bronx, New York, USA.
Spine (UNITED STATES) Jan 1 1997 , 22 (1) p51-7 , ISSN: 0362-2436--Print Journal Code: 7610646
Publishing Model Print
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
STUDY DESIGN: The authors studied the rotational effect of sublaminar wiring on the spinal pelvic axis on 20 patients who were being treated for adolescent idiopathic scoliosis. OBJECTIVES: To determine if sublaminar wiring effectively derotates the scoliotic spine. SUMMARY OF BACKGROUND DATA: The correction of the rotational deformity in adolescent scoliosis via sublaminar wiring is not well quantified in the literature. The derotation maneuver of Cotrel-Dubousset has been shown to produce variable and unpredictable amounts of axial derotation. METHODS: Twenty patients who underwent posterior spine fusion for adolescent idiopathic scoliosis were evaluated using computed tomography scans and plain radiography before and after surgery and at a subsequent follow-up examination (average time of follow-up examination, 35 months after surgery). The degree of angle of vertebral rotation about the sagittal plane and that relative to the pelvis were measured before and after surgery and at a follow-up examination. RESULTS: The primary thoracic curves were not derotated significantly relative to the pelvis with sublaminar wiring. Primary thoracolumbar curves instrumented on the convexity

with pedicle screws were derotated significantly relative to the pelvis (P = .001). The average initial correction was 57%. On final follow-up examination, the correction was 24% (18 of 20 twenty individuals lost axial correction by an average of 34%). In nine of 20 patients the spine was more rotated, relative to the pelvis, than it had been before surgery. No coronal or sagittal decompensation was seen in any curve type. CONCLUSIONS: Coronal and sagittal plane correction of scoliotic curves may be achieved with sublaminar instrumentation. The ability to derotate axially the scoliotic spine appears to be variable, however, and, in most cases, curve-type dependent. Over time, much correction appears to be lost, and in many patients the scoliosis actually becomes worse than it was before surgery. Nonetheless, the apical derotation that takes place appears to be reasonably true: the percent correction of angle of rotation about the sagittal plane and the percent correction of angle of rotation about the sagittal plain relative to the pelvis were closely correlated. Derotation forces applied to the instrumented spine do not appear to be transmitted to more distal segments.
Record Date Created: 19970424
Record Date Completed: 19970424

7/7/1 (Item 1 from file: 155)
Fulltext available through: USPTO Full Text Retrieval Options
MEDLINE(R)

14135673 PMID: 15456046
Idiopathic scoliosis under 30 degrees in growing patients. A comparative study of the F.E.D. method and other conservative treatments.
Lapuente J Pedro; Sastre Santos; Barrios Carlos
Centro Fisioterapeutico de Zaragoza, Maria Moliner, 50-52, 50007 Zaragoza.
Studies in health technology and informatics (Netherlands) 2002 , 88 p258-69 ,
ISSN: 0926-9630--Print Journal Code: 9214582
Publishing Model Print
Document type: Clinical Trial; Comparative Study; Controlled Clinical Trial; Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
PROBLEM ADDRESSED: Treatment of scoliosis under 30 degrees Cobb in growing patients remains controversial. Different orthopaedic devices have been developed and used with satisfactory results, alone or in combination with a variety of physiotherapy programs. The F.E.D. method is a dynamic three-dimensional therapy consisting in the application of derotational forces under spine stretching. This method offers some advantages over conventional conservative treatment for scoliosis: shorter treatment period, no use of plasters in many cases, better psychological tolerance, etc. PURPOSE OF THE WORK: In this work, the results of the F.E.D. method were compared to other conservative treatment techniques in scoliosis under 30 degrees Cobb angle and Risser 3 or less. RESEARCH METHOD: Both the F.E.D. group and the group of patients treated by traditional orthopaedic methods included 30 children. Patients were divided on the basis of the type of scoliotic deformity: thoracic, thoracolumbar or lumbar. SUMMARY OF RESULTS AND FINDINGS: The results obtained showed that patients treated with the F.E.D. method had a significantly better outcome than the other methods in terms of angle correction and shorter period of treatment necessary to reach correction. CONCLUSION: The F.E.D. method can be considered as the elective treatment in growing adolescents with scoliosis under 30 degrees.
Record Date Created: 20040930
Record Date Completed: 20041025

12/7/5 (Item 5 from file: 155)
Fulltext available through: USPTO Full Text Retrieval Options
MEDLINE(R)

12767356 PMID: 10870140
The role of bone graft force in stabilizing the multilevel anterior cervical spine plate system.
Wang J L; Panjabi M M; Isomi T
Biomechanics Laboratory, Department of Orthopaedics and Rehabilitation, Yale University School of Medicine, New Haven, Connecticut, USA.
Spine (UNITED STATES) Jul 1 2000 , 25 (13) p1649-54 , ISSN: 0362-2436--Print
Journal Code: 7610646
Contract/Grant No.: AR42211; AR; NIAMS
Publishing Model Print
Document type: In Vitro; Journal Article; Research Support, Non-U.S. Gov't; Research Support, U.S. Gov't, P.H.S.
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
STUDY DESIGN: The role of bone graft force in stabilizing an instrumented cervical spine was evaluated for one-level and three-level corpectomy models using in vitro experiments. OBJECTIVES: To investigate the role of bone graft force in enhancing stability of anterior cervical plate, and to study effects of fatigue loading. SUMMARY OF BACKGROUND DATA: The anterior cervical plate system is used widely in stabilizing the cervical spine after spinal corpectomy and grafting. Many factors such as applied screw torque, screw pullout force, plate strength, plate geometry, and type of bone graft have been studied. However, the role of bone graft in stabilizing the anterior plate system has not been explored. METHODS: Two models (one-level and three-level) incorporating corpectomy, strut graft, and anterior plate were constructed from eight human spine specimens (C2-T1). The flexibility of an intact specimen and two constructs with graft forces of 0 N and 100 N was determined. A flexibility test, simulating physiologic loads, consisted of pure moments of flexion, extension, lateral bending, and axial torques up to 1 Nm. For each moment, range of motion and neutral zone were determined. The stability potential index was defined as the decrease in motion caused by instrumentation, as compared with intact motion. A larger stability potential index indicates a more stable spinal construct. Repeated measures analysis of variance was used to determine the significant changes. RESULTS: In both models, bone graft force increased during extension, decreased during flexion, and showed minor changes during axial torsion and lateral bending. Higher bone graft force increased stability potential index-neutral zone and stability potential index-range of motion in the three-level model in all directions, but only in flexion-extension in the one-level model. Fatigue loading decreased bone graft force to a greater extent in the three-level model. CONCLUSIONS: In the corpectomy-graft-anterior-plate model, graft force decreased in flexion and increased in extension. Higher graft force increased and fatigue decreased stability of the spinal construct in the three-level model.
Record Date Created: 20000824
Record Date Completed: 20000824

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Set     Items   Description
S1       4065   S (SPINE OR SPINAL)(2N)(POSITION? OR STABILI?) OR SCOLIOSIS OR SCOLIOTIC
OR SPINOUS()PROCESS??
S2     681839   S IMPLANT? OR SURGERY OR SURGICAL??
S3    1300834   S PLATE OR PLATES OR ROD OR RODS OR SPRINGPLATE? ? OR SPRINGROD? ? OR
SPRING OR SPRINGS
S4      64504   S (TWIST???? OR ROTAT???? OR DEROTAT? OR AXIAL?? OR TORSION? OR
TURN????)(3N)(FORCE OR FORCES OR MOVEMENT? ?) OR TORQUE?
S5          1   S S1(S)S2(S)(S3(20N)S4)
S6          8   S S1(S)S2(S)S3(S)S4
S7          7   S S6 NOT S5
S8          7   RD  (unique items)
S9          7   SORT S8/ALL/PD,A [not relevant]
S10         0   S S1(S)S3(S)S4 NOT S6

5/3,K/1 (Item 1 from file: 441)
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00048082   00051907 (USE FORMAT 7 OR 9 FOR FULLTEXT)
Sintea Biotech launches spinal systems and instrumentation
Medical Industry Week
13 November 2002 (20021113 )
Record Type: FULLTEXT    Word Count: 1249 Company: Sintea Biotech
(THIS IS THE FULLTEXT)
Text:
...like spondylolisthesis and for providing posterior stabilisation, with
or without the use of dorsolumbar cages, PLIFs or ALIFS.  The link between
the screws and the rods is provided by a special elastic connecting
element which allows poly-axial screw-to-rod movement
during implantation.
The connection between the rod and the screws allows the components
to slide and rotate one another, as required to achieve the right
orthopaedic correction during thoraco-lumbar stabilisation surgery.
Moreover, the vertical positioning procedure of the rod with respect to the
head of the screw facilitates the work of the surgeon by minimising the...
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[File 350] Derwent WPIX 1963-2007/UD=200767

[File 347] JAPIO Dec 1976-2007/Jun(Updated 070926)

Set	Items	Description
S1	3021	S (SPINE OR SPINAL)(2N)(POSITION? OR STABILI?) OR SCOLIOSIS OR SCOLIOTIC OR SPINOUS()PROCESS??
S2	247430	S IMPLANT? OR SURGERY OR SURGICAL??
S3	3204376	S PLATE OR PLATES OR ROD OR RODS OR SPRINGPLATE? ? OR SPRINGROD? ? OR SPRING OR SPRINGS
S4	371065	S (TWIST???? OR ROTAT???? OR DEROTAT? OR AXIAL?? OR TORSION? OR TURN????)(3N)(FORCE OR FORCES OR MOVEMENT? ?) OR TORQUE?
S5	34	S S1 AND S2 AND S3(S)S4
S6	439883	S IC=(A61F? OR A61B?)
S7	343514	S DC=(P31 OR P32)
S8	34	S S5 AND S6:S7
S9	28	S S1(S)S3(S)S4
S10	10	S S9 NOT S5

8/3/15 (Item 15 from file: 350)
Derwent WPIX

0014537185 *Drawing available*
WPI Acc no: 2004-719139/200470
XRPX Acc No: N2004-570039
Implant for treating idiopathic scoliosis, has clasping member to clasp spinal column in manner spinal column is to be rotated in predetermined measure at time anchors are entrapping spinal column and linear plate is torqued
Patent Assignee: HADASIT MEDICAL RES SERVICES & DEV LTD (HADA-N); SIMANOVSKY N (SIMA-I)
Inventor: SIMANOVSKY N
Patent Family (2 patents, 106 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 2004086982	A2	20041014	WO 2004IL296	A	20040331	200470	B
US 20060282073	A1	20061214	WO 2004IL296	A	20040331	200701	E
			US 2006550189	A	20060713		

8/25,K/18 (Item 18 from file: 350)
Derwent WPIX

0013679428 *Drawing available*
WPI Acc no: 2003-776035/200373
Related WPI Acc No: 2000-638421
XRAM Acc no: C2003-213499
XRPX Acc No: N2003-621682
Flexible prosthesis for supporting adjacent vertebrae comprises flexible elongated plate defining longitudinal axis and having length to span intervertebral space between adjacent vertebrae
Patent Assignee: HOWMEDICA OSTEONICS CORP (HOWN)
Inventor: MIDDLETON L; MUHANNA N L
Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Update	Type
US 6585769	B1	20030701	200373	B

Local Applications (no., kind, date): US 1999127736 P 19990405; US 2000543288 A 20000405
Priority Applications (no., kind, date): US 1999127736 P 19990405; US 2000543288 A

20000405

Alerting Abstract US B1
NOVELTY - A flexible prosthesis for supporting adjacent vertebrae comprises a flexible elongated plate defining a longitudinal axis and having a length to span an intervertebral space between adjacent vertebrae. The plate comprises a material having physical characteristics approximating the natural biochemical characteristics of a spinal ligament to permit plate to provide support to adjacent vertebrae.
DESCRIPTION - A flexible prosthesis for supporting adjacent vertebrae comprises a flexible elongated plate (102) defining a longitudinal axis and having a length to at least span an intervertebral space between adjacent vertebrae. The plate comprises a material having physical characteristics approximating the natural biochemical characteristics of a spinal ligament to permit the plate to provide support to adjacent vertebrae when subjected to a load in tension while permitting a degree of torsional movement about the longitudinal axis when subjected to a load in torsion. The plate defines oppositely oriented longitudinal end portions (104), each end portion having at least two slotted apertures (108), and an intermediate portion (106) between the end portions. The intermediate portion defines a width less than corresponding widths of the end portions and has an area of reduced thickness to facilitate torsional movement of the plate. A fastener (110) is inserted into the two slotted apertures of each end portion for mounting the plate to the adjacent vertebrae.
USE - For supporting adjacent vertebrae.
ADVANTAGE - The prosthesis is simple and flexible, easily conforms to a patient's anatomy, and can be used independently or in combination with an intervertebral graft or implant. The biomechanical supporting characteristics of the plate approximate the characteristics of the ligament (e.g., anterior spinal) which it replaces, thus providing support to the spine in extension, which also permits normal spine mobility.
DESCRIPTION OF DRAWINGS - The figure is a perspective view of the artificial ligament.
102 Plate
104 End portions
106 Intermediate portion
108 Apertures
110 Fastener

Original Abstracts: ...simple and flexible artificial ligament which easily conforms to a patient's anatomy and can be used independently or in combination with an intervertebral graft, implant or prosthesis to return stability to the spine subsequent to a surgical spinal procedure is disclosed. In one preferred embodiment, the artificial ligament is in the form of a flexible conformable plate dimensioned to span adjacent vertebrae and having openings for... ...

Claims: ...to thereby permit the plate member to provide support to the adjacent vertebrae when subjected to a load in tension while permitting a degree of torsional movement about the longitudinal axis when subjected to a load in torsion, the flexible elongate plate member defining oppositely oriented longitudinal end portions, each end portion having at least two slotted apertures extending therethrough, and an intermediate portion disposed between the longitudinal end portions, the intermediate portion defining a width substantially less than corresponding widths of the longitudinal end portions and having an area of reduced thickness to facilitate torsional movement of the plate member, and a fastener inserted into the at least one of the at least two slotted apertures of each longitudinal end portion for mounting the plate member to the adjacent vertebrae.

8/25,K/22 (Item 22 from file: 350)
Derwent WPIX

0011021733 *Drawing available*

WPI Acc no: 2001-647427/200174
XRPX Acc No: N2001-483706
Spinal implant assembly has channel with two lateral surfaces, each having two undercut surfaces and closure material with two parallel longitudinal surfaces which engage in recesses in channel
Patent Assignee: INTERPORE CROSS INT (INTE-N)
Inventor: KNOTH D B; MELLINGER P A
Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Update	Type
US 6302888	B1	20011016	200174	B

Local Applications (no., kind, date): US 1999272493 A 19990319
Priority Applications (no., kind, date): US 1999272493 A 19990319

Alerting Abstract US B1
NOVELTY - The assembly includes a bone anchor (14) and a fastener (18). The anchor has a U-shaped channel (20) which receives a stabilizer rod (12). The channel has two parallel lateral surfaces (30), each having two undercut surfaces, and a closure material (16) having two parallel longitudinal surfaces. Each longitudinal surface has two flanges which engage into recesses formed in undercut surfaces of channel.
DESCRIPTION - An INDEPENDENT CLAIM is also included for a set screw for use in spinal implant.
USE - For manipulation or stabilization of spine.
ADVANTAGE - Offers a self-limiting implant assembly which can obtain higher torque and allows for a gradual transition shear rather than a sudden snapping. Allows as much flexibility for e.g. surgeon as possible and yet to include some self-limiting features in order to maintain ease of application.
DESCRIPTION OF DRAWINGS - The figure shows the perspective view of the spinal implant assembly.
12 Stabilizer rod
14 Bone anchor
16 Closure material
18 Fastener
20 Channel
30 Lateral surfaces

Original Abstracts: A spinal implant assembly is provided which has a stabilizer rod clamped into position within an anchor by means of a sliding closure member including a mating set screw or hook. The exterior faces of the anchor are contoured to optimize interface in the surgical setting. The anchor includes a U-shaped channel having multiple undercut surfaces such as grooves, which mate with flange like projections or "dovetails" of a...

8/25,K/23 (Item 23 from file: 350)
Derwent WPIX

0011014682 *Drawing available*
WPI Acc no: 2001-640236/200174
XRPX Acc No: N2001-478677
Pedicel screw for implant for correction and stabilization of spinal column has head part at axial end of threaded shaft to which stirrup part is connectable and which has accommodation for bar fixable to head part
Patent Assignee: ULRICH GMBH & CO KG (ULRI-N)
Inventor: SCHAEFFLER-WACHTER M; SCHAFFLER-WACHTER M; SCHOENHOEFFER H; SCHOENHOFFER H; SCHONHOFFER H
Patent Family (7 patents, 27 countries)

Patent Number	Kind	Date	Update	Type
EP 1121902	A2	20010808	200174	B
DE 10005385	A1	20010809	200174	E
US 20010012937	A1	20010809	200174	E
US 6402752	B2	20020611	200244	E
EP 1121902	B1	20040922	200462	E
DE 50103696	G	20041028	200471	E
ES 2223651	T3	20050301	200519	E

Local Applications (no., kind, date): EP 2001100933 A 20010117; DE 10005385 A 20000207; US 2001778336 A 20010207; US 2001778336 A 20010207; EP 2001100933 A 20010117; DE 50103696 A 20010117; EP 2001100933 A 20010117; EP 2001100933 A 20010117
Priority Applications (no., kind, date): EP 2001100933 A 20010117; DE 10005385 A 20000207

Alerting Abstract EP A2
NOVELTY - The pedicel screw for an implant for correction and stabilization of the spinal column has a head part at the axial end of a threaded shaft (3) to which a stirrup part (7) is connectable, and which has an accommodation for a bar (2) fixable to the head part. The head part is formed by a round piece (4), on which a cap (6) is rotatably located.
DESCRIPTION - The stirrup part by means of an insert movement in an axial direction is fixable in a securing seat on the cap. The round piece is formed as a hemisphere (20) with a plain surface (22) facing the free end and orientated vertically to the threaded shaft.
USE - As a pedicel screw for an implant for correction and stabilization of the spinal column.
ADVANTAGE - The space requirement for placing and adjustment of the pedicel screw during an operation is reduced.
DESCRIPTION OF DRAWINGS - The figure shows a section through a side view of the pedicel screw.
2 Bar
3 Threaded shaft
4 Round piece
6 Cap
7 Stirrup part
20 Hemisphere
22 Plain surface

Original Abstracts:... A pedicle screw for implants for correction and stabilisation of the spinal column, comprising a head portion (5) which is arranged at the axial end of a screwthreaded shank (3) and a stirrup portion (7) which can be connected to the head portion and which is of a U-shaped configuration with a base plate (8) and two side limbs (9) and has a receiving means for a rod (2) which can be fixed to the head... ... the round part (4) and that the stirrup portion (7) can be fixed in a retaining fit on the cap (6) by a plug-in movement in the axial direction...

8/25,K/24 (Item 24 from file: 350)
Derwent WPIX

0010901620 *Drawing available*
WPI Acc no: 2001-522430/200157
XRPX Acc No: N2001-387173
Spinal implant system for stabilizing vertebrae in treating spinal conditions, e.g. scoliosis, comprises a rod secured within a bone anchor channel by a cap nut with an internal recess and boss with a high friction surface

Patent Assignee: CROSS MEDICAL PROD INC (CROS-N); INTERPORE ORTHOPAEDICS INC (INTE-N)
Inventor: MELLINGER P A; PERRA J; PERRA J A; PUNO R; PUNO R M
Patent Family (7 patents, 31 countries)

Patent Number	Kind	Date	Update	Type
WO 2001058370	A1	20010816	200157	B
AU 200129468	A	20010820	200175	E
US 6443953	B1	20020903	200260	E
EP 1253865	A1	20021106	200281	E
KR 2002081308	A	20021026	200317	E
JP 2003521993	W	20030722	200350	E
AU 2001229468	B2	20040826	200476	E

Local Applications (no., kind, date): WO 2001US1246 A 20010112; AU 200129468 A 20010112; US 2000181010 P 20000208 ; US 2000518961 A 20000306; EP 2001951121 A 20010112; WO 2001US1246 A 20010112; KR 2002710233 A 20020808; JP 2001557484 A 20010112; WO 2001US1246 A 20010112; AU 2001229468 A 20010112
Priority Applications (no., kind, date): US 2000181010 P 20000208; US 2000518961 A 20000306

Alerting Abstract WO A1
NOVELTY - The cap nut (18) holds the cylindrical stabilization rod (12) securely in the anchor rod channel (20) via an internal torque driving surface, e.g. hexagonal recess. The cap nut has internal threads (49) that mate with the anchor external threads and a smooth cylindrical sidewall joined by a beveled area to a flat top wall with an internal recess (36).
DESCRIPTION - The boss (46) extends from the top wall and has a high friction bottom surface (50) formed by an annular ridge (52).
USE - Spinal implant stabilization system for treating spinal conditions, e.g. correction of spinal curvature due to scoliosis.
ADVANTAGE - The internal torque drive reduces the space needed to apply the cap nut and enables closer spacing of adjacent anchors. The boss projects internally into the anchor recess and renders the cap nut self-aligning to minimize cross threading. The gripping surface formed by the sidewall terminal edge is enhanced by the annular ridge which forms an inner concentric grip to lock the rod in the anchor channel, thereby providing resistance to relatively large forces acting against the components.
DESCRIPTION OF DRAWINGS - The drawings show cross-section views of the cap nut and spinal implant system.
12 Stabilization rod
18 Cap nut
20 Anchor rod channel
36 Internal recess
46 Boss
49 Cap nut internal threads
50 High friction bottom surface
52 Annular ridge.

Original Abstracts: A spinal stabilization system (10) comprising: a bone anchor having a recess which defines a rod receiving channel (20) and having sidewalls which extend beyond the rod receiving channel which include external threads; a rod (12), and a locking member (16) havign a sidewall defining an internal recess (36) having internal threads (49) that mate with the external threads of the anchor, and a top wall (44) with a cavity (36) defining an internal torque driving surface (39), and a guide member (46) that extends downwardly from said top wall into said internal recess... ... A spinal implant system is provided having a stabilization rod, a plurality of bone anchors which could be either hooks or screws and which have an internal recess that defines a rod-receiving channel...

Claims: A spinal stabilization system comprising: a bone anchor having a recess which defines a rod receiving channel and having sidewalls which extend beyond the rod receiving channel which include external threads; a rod, and a locking member having a sidewall defining an internal recess having internal threads that mate with the external threads of the anchor, a top wall with a cavity defining an internal torque driving surface, and an integral guide member that extends downwardly from said top wall into said internal recess.

8/25,K/29 (Item 29 from file: 350)
Derwent WPIX

0007167215 *Drawing available*
WPI Acc no: 1995-206751/199527
XRPX Acc No: N1995-162017
Osteosynthesis implant for spinal column - comprising anchoring element with two branches and surrounding plate with threaded surfaces for rod-retaining stopper
Patent Assignee: SOFAMOR DANEK GROUP INC (SOFA-N)
Inventor: PETIT D; SIFFERLEN M; ZAOUALI M
Patent Family (2 patents, 45 countries)

Patent Number	Kind	Date	Update	Type
WO 1995014437	A1	19950601	199527	B
AU 199455667	A	19950613	199539	E

Local Applications (no., kind, date): WO 1993FR1164 A 19931125; WO 1993FR1164 A 19931125; AU 199455667 A 19931125
Priority Applications (no., kind, date): WO 1993FR1164 A 19931125

Alerting Abstract WO A1
The implant consists of an anchoring element (2) with a body (3) for fixing to a rod and equipped with two side branches (5) forming a channel (6) between them which is open at both ends to receive the rod (4). The inner faces of the two branches are threaded to receive a stopper (7), and they are surrounded by a plate (16).
The plate has two curved and threaded sections which extend on either side of the stopper between the two branches to provide a continuous threaded surface for the stopper. The outer surfaces of the plate can be equipped with notches for a fitting tool which is also used to fit the stopper.
ADVANTAGE - More reliable rod retention without damage to thread.

Original Abstracts: An implant (1) including a bone anchor portion (2) and a body (3) attachable to a rod (4) and provided with two side arms (5) defining a channel (6). Said implant further includes a screw cap (7) for screwing onto the inner walls of the two arms (5), the rod-engaging surface of the cap being provided with rod-gripping portions, and a ring-shaped plate (16) surrounding the arms (5) and having two threaded circular segments extending on either side of the cap between said arms (5). As a result, the plate (16) and the threads of the arms (5) continuously guide the cap (7) so that, with the arms (5) held in position, the cap (7) will not pop out during final high-torque tightening thereof.

8/25,K/30 (Item 30 from file: 350)
Derwent WPIX

0007161892 *Drawing available*
WPI Acc no: 1995-200156/199526
XRPX Acc No: N1995-157239
Retainer for use with elongated stabiliser for spine - comprises closure member having

retaining flanges which dove tail relative to undercut retaining flanges
Patent Assignee: CROSS MEDICAL PROD INC (CROS-N)
Inventor: BYRD J; BYRD J A; MELLINGER P; MELLINGER P A; PUNO R; PUNO R M
Patent Family (11 patents, 23 countries)

Patent Number	Kind	Date	Update	Type
WO 1995013755	A1	19950526	199526	B
AU 199511813	A	19950606	199538	E
US 5496321	A	19960305	199615	E
EP 786964	A1	19970806	199736	E
EP 786964	A4	19970806	199813	E
AU 693498	B	19980702	199837	E
AU 199860738	A	19980604	199839	E
AU 702680	B	19990304	199921	E
EP 786964	B1	20040331	200426	E
DE 69433671	E	20040506	200434	E
ES 2218538	T3	20041116	200477	E

Local Applications (no., kind, date): WO 1994US13317 A 19941117; AU 199511813 A 19941117; US 1993155430 A 19931119; US 1994355100 A 19941212; WO 1994US13317 A 19941117; EP 1995902597 A 19941117; EP 1995902597 A 19941117; AU 199511813 A 19941117; AU 199511813 A 19941117; AU 199860738 A 19980409; AU 199511813 A 19941117 ; AU 199860738 A 19980409; WO 1994US13317 A 19941117; EP 1995902597 A 19941117; DE 69433671 A 19941117; WO 1994US13317 A 19941117; EP 1995902597 A 19941117; EP 1995902597 A 19941117
Priority Applications (no., kind, date): US 1993155430 A 19931119; US 1994355100 A 19941212

Alerting Abstract WO A1
The holding member comprises a seat having a channel. The channel has an axis in a first direction. The channel receives the elongated stabiliser so that the longitudinal axis of the stabiliser is aligned in the first direction. It has a sliding closure member, which has a sliding cooperation with the seat whereby the closure member may be slid in the first direction to engage the seat.
The seat includes a member to retain the closure member from disengagement from the channel. The anchor closure member includes a rod interface surface which cooperates with less than all of the circumference of the rod.
USE/ADVANTAGE - Esp. as bone interface anchor for holding stabilising rod. Minimises operating time.

Original Abstracts: ... A spinal implant assembly is provided having a top loading anchor which is fixed to a spinal member by means of a hook or screw. The anchor includes a seat having a channel to receive a stabilizer... ... the seat channel, as well as inhibit the splaying of the seat member in response to forces which may be imposed upon the seat member during derotation of the spine. In addition, the seat member includes a boss and/or hollow to form a biased lock and compression screw to lock the rod in position relative to the anchor. An instrument is provided which holds the slide for assembly in a spring loaded ball plunger. A spinal implant assembly is provided having a top loading anchor (11) which is fixed to a spinal member by a hook (14). The anchor (11) includes a seat member (12) having a channel (22) to receive a stabilizer rod (20) and a sliding interconnecting closure member (16) which slides in a longitudinal direction relative to the seat member (12) to form an integral closed implant assembly. The closure member (16) includes retaining flanges (41) which dovetail relative to undercut retaining flanges (28) of the seat member (12) so as to prohibit the sliding closure member (16) from being dislodged from the seat channel (22... ... well as inhibit the splaying of the seat member (12) in response to forces which may be imposed upon the seat member (12) during de-rotation of the spine. In addition, the seat member (12) includes a set screw (18) for locking the rod (20) in position relative to the anchor (11).An instrument (78) is

provided which has a spring loaded ball plunger (89) for holding the closure member (16) during assembly to the seat member (12). ...

8/25,K/31 (Item 31 from file: 350)
Derwent WPIX

0006980396 *Drawing available*
WPI Acc no: 1994-279326/199434
XRPX Acc No: N1994-220108
System for treating spinal disorder - includes pairs of anchors associated with corresp. vertebrae and carrying tie extending towards internal brace structure
Patent Assignee: CENT RECH HOPITAL SAINTE-JUSTINE (REHO-N); CENT RECH HOPITAL SOC JUSTINE (REHO-N); CENT RECH HOPITAL STE JUSTINE (REHO-N); RIVARD C (RIVA-I)
Inventor: RIVARD C
Patent Family (9 patents, 46 countries)

Patent Number	Kind	Date	Update	Type
WO 1994017736	A1	19940818	199434	B
AU 199459977	A	19940829	199501	E
US 5413576	A	19950509	199524	E
EP 683644	A1	19951129	199601	E
JP 8509389	W	19961008	199705	E
EP 683644	B1	20000628	200035	E
DE 69425046	E	20000803	200044	E
ES 2149866	T3	20001116	200064	E
CA 2155681	C	20051108	200577	E

Local Applications (no., kind, date): WO 1994CA68 A 19940209; AU 199459977 A 19940209; WO 1994CA68 A 19940209; US 199315919 A 19930210; EP 1994906114 A 19940209; WO 1994CA68 A 19940209; JP 1994517481 A 19940209; WO 1994CA68 A 19940209; EP 1994906114 A 19940209; WO 1994CA68 A 19940209; DE 69425046 A 19940209; EP 1994906114 A 19940209; WO 1994CA68 A 19940209; EP 1994906114 A 19940209; CA 2155681 A 19940209; WO 1994CA68 A 19940209
Priority Applications (no., kind, date): US 199315919 A 19930210

Alerting Abstract WO A1
The system comprises a pair of implantable rods for mounting on either side of a spinal column coextensive with a portion of the spinal column to be treated. A first element rigidly connects the rods together in a spaced-apart parallel arrangement to provide a unitary internal brace structure. Pairs of anchors are provided each being associated with a corresponding one of a number of selected vertebrae.
Each of the anchors is disposed on respective transverse processes of the corresponding one of the selected vertebrae in the portion of the spinal column to be treated. A tie extends from each of the anchors to respective ones of second connectors on a respective rod of the internal brace structure on either side of the spinal column.
USE - Esp. for the treatment of scoliosis.

Equivalent Alerting Abstract ...A pair of implantable rods are mounted on either side of the spinal column co-extensive with a portion of the spinal column to be treated. Transverse bars rigidly... ...respective rod on either side of the spinal column for retaining individual vertebra in a predetermined location relative to the internal brace system and against torsional forces applied through the spinal column. A further anchor is provided on the spinous process of the selected vertebra. Second flexible tie members extend from the respective cuffs on the transverse processes to the anchor on the spinous process in order to prevent the cuffs from slipping off the transverse processes... ...ADVANTAGE - Corrects the spine disorder in the treatment of scoliosis, and eliminates the need in most cases of resorting to bone graft to supplement the support offered by the system.

Original Abstracts:... An internal brace system includes a pair of implantable rods for mounting on either side of the spinal column co-extensive with a portion of the spinal column to be treated. Transverse bars rigidly connect the rods together in spaced-apart parallel arrangement... ... respective rod on either side of the spinal column for retaining individual vertebra in a predetermined location relative to the internal brace system and against torsional forces applied through the spinal column. A further anchor is provided on the spinous process of the selected vertebra. Second flexible tie members extend from the respective cuffs on the transverse processes to the anchor on the spinous process in order to prevent the cuffs from slipping off the transverse processes... ...

Claims:The system comprises a pair of implantable rods for mounting on either side of a spinal column coextensive with a portion of the spinal column to be treated. A first element rigidly...
... An internal brace system (10) comprising: a pair of implantable rods (12, 14) for mounting on either side of a spinal column coextensive wit a portion of the spinal column to be treated; first means (16, 18) for rigidly connecting said... ... selected vertebrae while retaining said corresponding one of said plurality of selected vertebrae in a predetermined location relative to the internal brace structure and against torsional forces applied through the spinal column....
An internal brace system comprising: a pair of implantable rods adapted to be on either side of a spinal column coextensive with a portion of the spinal column to be treated; first connecting means for rigidly connecting said rods together in a spaced-apart parallel arrangement to provide... ... of said anchor means while retaining said anchor means in a predetermined location relative to the internal brace structure and through the selected vertebrae against torsional forces applied through the spinal column.

8/25,K/33 (Item 33 from file: 350)
Derwent WPIX

0005801282
WPI Acc no: 1992-024164/199203
XRPX Acc No: N1992-018483
System for treatment of spinal deformity - has two rods and cross bars extend laterally between rods to form quadrilateral construct and hooks to engage vertebra
Patent Assignee: BOCK ORTHOPAEDISCHE IND BESITZUND OTTO (BOCK-N); ROGOZINSKI C (ROGO-I)
Inventor: ROGOZINSKI C
Patent Family (6 patents, 17 countries)

Patent Number	Kind	Date	Update	Type
WO 1991019469	A	19911226	199203	B
US 5102412	A	19920407	199217	E
EP 487710	A1	19920603	199223	E
US 5181917	A	19930126	199307	E
JP 5505749	W	19930826	199339	E
EP 487710	A4	19940727	199532	E

Local Applications (no., kind, date): WO 1991US4585 A 19910618; US 1990540635 A 19900619; EP 1991912685 A 19910618; WO 1991US4585 A 19910618; US 1990540635 A 19900619; US 1991801899 A 19911203; JP 1991511810 A 19910618; WO 1991US4585 A 19910618 ; CA 2084517 A 19910604
Priority Applications (no., kind, date): US 1991801899 A 19911203; US 1990540635 A 19900619

Alerting Abstract WO A
The surgical implant to connect spiral abnormalities has a rod which extends alongside the spiral vertabrae and it can be held in position by a lamina. In this position a force

is provided in an axial direction relative to the spine. In a second position, a further lamina given a second axial force.
The ends of these devices are provided in receiving recesses in the rod. Fastening devices preclude movement between the rod and the lamina devices.
ADVANTAGE - Allows device to be modified without being dismantled. @(46pp Dwg.No.2/47)@

Equivalent Alerting Abstract ...are provided for engagement on spaced vertebra. The vertebra engagers are secured on at least one elongate rod in axially spaced relationship, to impose opposed axial forces on the spine. In a preferred arrangement, two rods are used, and cross bars extend laterally between the rods to form a quadrilateral construct... ...comprise hooks, screws, or a combination of hooks and bone screws. Couplers are used to secure the screws and the transverse cross bars to the rods. The couplers and hooks all have similarly shaped and sized bodies with slotted backs opening in a posterior direction, so that they may be interchanged in various positions relative to one another on the rods for optimum vertebral engagement... ...USE - A spinal rod system for instrumenting the spine in the treatment of spinal abnormalities... ...are provided for engagement on spaced vertebra. The vertebra engagers are secured on at least one elongate rod in axially spaced relationship, to impose opposed axial forces on the spine. In a preferred arrangement, two rods are used, and cross bars extend laterally between the rods to form a quadrilateral construct... ...comprise hooks, screws, or a combination of hooks and bone screws. Couplers are used to secure the screws and the transverse cross bars to the rods. The couplers and hooks all have similarly shaped and sized bodies with slotted backs opening in a posterior direction...

Original Abstracts: ...and method for instrumenting the spine in the treatment of spinal abnormalities, in which a plurality of vertebra engaging means are provided to impose opposed axial forces on the spine. In a preferred arrangement, two rods (13) are used, and cross bars (73) extend laterally between the rods to form a quadrilateral construct. The vertebra engaging means may comprise hooks (20, 21), screws (42), or a combination of hooks and bone screws. Couplers (80) are used to secure the screws and the transverse cross bars to the rods. The couplers and hooks all similarly shaped and sized bodies with slotted backs opening in a posterior direction, whereby the hooks may be first applied to the vertebra and the rods then pivoted into place for laying the rods into the slotted backs of the bodies to secure the components in place... ... for engagement on spaced vertebra, and the vertebra engaging means are secured on at least one elongate rod in axially spaced relationship, to impose opposed axial forces on the spine. In a preferred arrangement, two rods are used, and cross bars extend laterally between the rods to form a quadrilateral construct. The vertebra engaging means may comprise hooks, screws, or a combination of hooks and bone screws. Couplers are used to secure the screws and the transverse cross bars to the rods. The couplers and hooks all have similarly shaped and sized bodies with slotted backs opening in a posterior direction, whereby they may be interchanged in various positions relative to one another on the rods for optimum vertebral engagement, and the hooks may be first applied to the vertebra and the rods then pivoted into place for laying the rods into the slotted backs of the bodies to secure the components in place. The screw has a T-shaped head pivotally received in a coupler whereby two screws may be inserted into the pedicle...

Claims: The surgical immplant to connect spiral abnormalities has a rod which extends alongside the spiral vertabrae and it can be held in position by a lamina. In this position a force is provided in an axial direction relative to the spine. In a second position, a further lamina given a second axial force.... ... A method of instrumenting the spine to correct spinal abnormalities, such as scoliosis and kyphosis, by applying axially opposed forces on the lamina of spaced vertebrae, in a direction substantially parallel to the longitudinal axis of the spine, through the use of a spinal construct having at least one elongate rod extending alongside the spine and vertebrae engaging means secured on the rod and engaged with the lamina of the vertebrae, comprising the steps of: providing a plurality of vertebra engaging means, each having a body with a

generally U-shaped open slot in a posterior surface thereof; affixing a first vertebra engaging means to the rod at one end of the rod; applying at least one second vertebra engaging means on the lamina of a vertebra near one end of the section of spine to be instrumented; applying the first vertebra engaging means to the lamina of a vertebra near the other end of the section of spine to be corrected; pivoting the rod in an anterior direction about a transverse axis at the first vertebra engaging means and laying the rod into the slotted back of the second vertebra engaging means; and securing the rod in fixed position relative to the first and second vertebra engaging means.

8/25,K/34 (Item 34 from file: 350)
Derwent WPIX

0003347648
WPI Acc no: 1985-112268/198519
Dynamic correction of spinal deformation - uses implanted elastic rod constantly pulling spine into shape and secured to vertebrae by retaining clamps
Patent Assignee: PEZE W (PEZE-I)
Inventor: PEZE W; WILLIAM P
Patent Family (5 patents, 8 countries)

Patent Number	Kind	Date	Update	Type
EP 140790	A	19850508	198519	B
FR 2553993	A	19850503	198523	E
US 4697582	A	19871006	198742	E
EP 140790	B	19890329	198913	E
DE 3477465	G	19890503	198919	E

Local Applications (no., kind, date): EP 1984402149 A 19841024; FR 198317289 A 19831028; US 1984664225 A 19841024 ; EP 1984402149 A 19841024
Priority Applications (no., kind, date): FR 198317289 A 19831028

Alerting Abstract EP A
A mechanical assembly of biocompatible material is implanted on the deformed part of the spine. A retention clamp (9) having a guide orifice (10) traversing it parallel to the spine axis is screwed on each vertebra (1-4) of the deformed zone, in the angle formed by the backbone offshoot (8) and the stem.
An elastic recall rod (11) having a memory of the shape of the corresponding part of a normal spine is threaded through each guide orifice, is immobilised in rotation in each guide and is immobilised in translation in one of the guides.
USE - For dynamic correction of spindle deformation via an implanting operation.

Equivalent Alerting Abstract ...The appliance for the dynamic correction of rachidial deformities. In the deformed part of the rachis which it is wished to correct is implanted a mechanical assembly of biocompatible material. Screwed onto each vertebra of the deformed area, in the angle formed by the spinous process and the disc a retaining clamp has at least one guide opening from one side to the other parallel to the axis of the rachis...

Original Abstracts: An appliance for the dynamic correction of rachidial deformities, wherein in the deformed part of the rachis which it is wished to correct is implanted a mechanical assembly of biocompatible material comprising screwed onto each vertebra of the deformed area, in the angle formed by the spinous process and the disk, a retaining clamp having at least one guidance opening from one side to the other parallel to the axis of the rachis; an elastic restoring or...

Claims: A mechanical assembly of biocompatible material is implanted on the deformed part of the spine. A retention clamp (9) having a guide orifice (10) traversing it parallel to

the spine axis is screwed... ...for the dynamic correction of rachidial deformities comprising a flexible structure made from a biocompatible material and having a generally elongated shape and which is implanted along that part of the rachis which it is wished to correct, characterised in that said flexible structure is an elastic restoring structure having at rest the shape of the corresponding part of a rachis and which is able to exert, when implanted on the diseased part of the rachis, a correction with a slight, constant intensity in the three directions in space, namely a torsion in a frontal plane, a torsion in a sagittal plane and a torque along the axis of the column, said structure being constituted by at least one elastic rod fixable to each vertebra (1,2,3,4) of the diseased part with the aid of retaining clamps (9,17) which can be screwed into the said vertebrae (1,2,3,4) in the angle formed by the spinuous process (8) and the plate, each retaining clamp (9,17) having at least one guide opening (10,19) passing through the same parallel to the axis of the rachis, said elastic rod being introduced into the guide openings (10,19) and fixed in rotation in each guide opening and in translation on a single retaining clamp. (12pp)

10/25,K/7 (Item 7 from file: 350)
Derwent WPIX

0012951390 *Drawing available*
WPI Acc no: 2003-028268/200302
Related WPI Acc No: 2002-350795
XRPX Acc No: N2003-022158
Spinal deformities correction apparatus has transverse plate with curved ends which conform to contours of vertebra pedicle and centrally slotted coupling unit
Patent Assignee: SALUT LTD (SALU-N)
Inventor: RAY R C
Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Update	Type
US 6458131	B1	20021001	200302	B

Local Applications (no., kind, date): US 2000633480 A 20000807
Priority Applications (no., kind, date): US 2000633480 A 20000807

Alerting Abstract US B1
NOVELTY - A transverse plate (102) in each of multiple vertebra clamp sets, has curved ends (104,106) which conform to the vertebra pedicle contours and a rail (166) coupled to each clamp set. A centrally slotted coupling unit (164) is formed at the center region of the plate.
DESCRIPTION - INDEPENDENT CLAIMS are included for the following:
Invasive method for reducing spinal deformities; and
Clamp set.

USE - For realigning abnormal curvature e.g. scoliosis of spine.
ADVANTAGE - Allows the use of single rod system that will reduce the scoliotic spine in all, three planes, distributes the force during correction of spine, over the vertebra. Attaches rigidly to the spine and applies required torque to correct the axial plane deformity. Causes less disruption of the healing muscles and allows more area for bone grafts. Avoids incorrect rail length and over-compensation or under-compensation of rail contours. Allows greater rotational forces without fear of damaging bone tissue. Allows fine adjustment of degree of reduction without slippage between clamp sets and rail and provides greater stability.
DESCRIPTION OF DRAWINGS - The figure shows the top plan view of the clamp set.
102 Transverse plate
104,106 Curved ends
166 Rail
164 Coupling unit

Original Abstracts: ...has a first pedicle extension, and the second end has a second pedicle extension. At least one pedicle extension is used to transmit a downward force during rotation of the vertebra. The clamp set also includes a first laminar hook located on the first end of the plate and is integral with the plate to hook on a superior portion of a first lamina of a vertebra. The clamp set also includes a second laminar hook to hook from an opposite direction on... ... set includes a rail coupling member having a slot to receive a rail. The rail coupling member is located on the center region of the plate, and the slot is configured to accept the rail cross-sectional shape. A plurality of the clamp sets are attached along a portion of the spine, followed by adjustment...

10/25,K/8 (Item 8 from file: 350)
Derwent WPIX

0012406709 *Drawing available*
WPI Acc no: 2002-350795/200238
Related WPI Acc No: 2003-028268
XRPX Acc No: N2002-275607
Tool for reducing spinal deformity includes two members having neck portions connecting handle portions to nose portions which have open-sided arms with locking elements to lock onto vertebral clamp set
Patent Assignee: RAY R C (RAYR-I)
Inventor: RAY R C
Patent Family (4 patents, 94 countries)

Patent Number	Kind	Date	Update	Type
US 20020019633	A1	20020214	200238	B
AU 200176993	A	20020218	200244	E
WO 2002011631	A2	20020214	200319	E
AU 2001276993	A8	20050908	200568	E

Local Applications (no., kind, date): US 2000633480 A 20000807; US 2001940306 A 20010827; AU 200176993 A 20010718 ; WO 2001US22691 A 20010718; AU 2001276993 A 20010718
Priority Applications (no., kind, date): US 2000633480 A 20000807; US 2001940306 A 20010827

Alerting Abstract US A1
NOVELTY - The tool (500) includes a first member (504) having a handle portion (506), a nose portion (510), with a neck portion (508) connecting the handle portion to the nose portion. A second member (512) has a handle portion (514), and a nose portion (518) with a neck portion (516) connecting the handle portion to the nose portion. The two members are connected at the neck portions. The nose portions include an open-sided elongated arm with a locking element to lock onto a vertebral clamp set (502). The clamp set has a longitudinal rail attached to it after adjustment with the tool.
USE - For realigning any abnormal curvature of the spine and more. Is used with posterior instrumentation having claw-like clamp sets to affix to vertebrae which enable reduction of the vertebrae followed by attachment to a pre-contoured rail to reduce spinal deformities such as scoliosis.
ADVANTAGE - apparatus and method for reducing a scoliotic spine. Has single rail causing less disruption of the healing muscles and allowing more area for bone grafts. Is more secure instrumentation attached to the individual vertebra as compared with singular bone hooks, which may shear from their lamina and cause damage to bone or nerve tissue.
DESCRIPTION OF DRAWINGS - The drawing is a perspective view of a tool.
500 Tool
502 Clamp set
504,512 First and second members

506,514 Handle portions
508,516 Neck portions
510,518 Nose portions

Original Abstracts: ...has a first pedicle extension, and the second end has a second pedicle extension. At least one pedicle extension is used to transmit a downward force during rotation of the vertebra. The clamp set also includes a first laminar hook located on the first end of the plate and is integral with the plate to hook on a superior portion of a first lamina of a vertebra. The clamp set also includes a second laminar hook to hook from an opposite direction on an inferior portion of a... ... set includes a rail coupling member having a slot to receive a rail. The rail coupling member is located on the center region of the plate, and the slot is configured to accept the rail cross-sectional shape. A plurality of the clamp sets are attached along a portion of the spine, followed by adjustment and fixation of the individual...

8/26/19 (Item 19 from file: 350)
Derwent WPIX

0013176321 *Drawing available*
WPI Acc no: 2003-259622/200326
Osteosynthesis frame for spinal surgery has anchor with locking grub screw pressing retaining saddle against connector rod

8/26/26 (Item 26 from file: 350)
Derwent WPIX

0010470813 *Drawing available*
WPI Acc no: 2001-070657/200108
Method of fusing spinal region for treating spinal disorders, involves contacting guide tube against vertebra, abrading portion of disc end plate, forming cavity and flowing flowable fusion substance into cavity

10/26/5 (Item 5 from file: 350)
Derwent WPIX

0014120183 *Drawing available*
WPI Acc no: 2004-304658/200428
Cervical plate system for fusing segments of human cervical spine, has threaded section with pitch matching helical track pitch in plate, and arranged so that when screw is threaded into opening screw is rotated relative to plate